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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/673,003	09/26/2003	Gary R. Ashton	200206465-1	9774

7590 05/13/2005

HEWLETT-PACKARD COMPANY  
Intellectual Property Administration  
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Fort Collins, CO 80527-2400

EXAMINER

TRAN, TAN N

ART UNIT PAPER NUMBER

2826

DATE MAILED: 05/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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**Office Action Summary**

Application No.

10/673,003

Applicant(s)

ASHTON ET AL.

Examiner

TAN N. TRAN

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 29 April 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) 20-31 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☒ Claim(s) 19 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

*Minhloan Tran*  
**Minhloan Tran**  
**Primary Examiner**  
**Art Unit 2826**

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
 Paper No(s)/Mail Date 09/26/03.
- 4) ☐ Interview Summary (PTO-413)  
 Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### **Election/Restriction**

1. Applicant's election with traverse of Fig.4, claims 1-19 is acknowledge. The traversal is on the ground(s) that "a search directed to the apparatus claims would sufficiently overlap with a search based on the method claims to negate need for further search". These are not found persuasive because applicant did not submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence of admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention. Moreover, it clearly shows that the search is not coextensive as evidenced by the different fields of search as cited in the previous restriction requirement. Thus, it is clear that the examination of all of the disclosed species would be an undue burden. Therefore the election requirement is made final.

### **Drawings**

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, a first diode layer and a second diode layer as recited in claim 11 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

**Claim Rejections - 35 USC § 102**

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-18 are rejected under 35 U.S.C. 102(e) as being anticipated by Chaiken (2004/0218499).

With regard to claims 1,5, Chaiken discloses an ultra-high data storage device using phase-change diode memory device comprising a phase-change data storage layer 202 which serves as a diode layer having capable of changing states in response to the beams wherein the phase-change data storage layer 202 made of copper, indium, selenium. (Note lines 3-12, paragraph 0021, page 3; lines 3-12, paragraph 0074, page 6, figs. 6,8 of Chaiken).

With regard to claim 2, Chaiken discloses the phase-change data storage layer 202 is doped with gallium. (Note lines 3-12, paragraph 0021, page 3; lines 3-12, paragraph 0074, page 6, fig. 6 of Chaiken).

With regard to claims 3,4, Chaiken discloses the phase-change date storage layer 202 comprises Cu(InGa)Se<sub>2</sub> or Cu(In<sub>1-x</sub>)GaSe<sub>2</sub> material. (Note line 1, paragraph 0064, page 6; line 1,

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paragraph 0067, page 6; lines 3-12, paragraph 0021, page 6; lines 3-12, paragraph 0074, page 6, fig. 6 of Chaiken).

With regard to claims 6-8, Chaiken discloses a second layer 206 which made of  $\text{CuInSe}_2$  or  $\text{Cu}(\text{In}_{1-x}\text{Ga}_x)\text{Se}_2$  adjacent to the phase change data storage layer 202. (Note lines 2-4, paragraph 0076, page 6, fig. 6 of Chaiken).

With regard to claim 9, it is inherent that Chaiken discloses a silicon substrate adjacent to the second layer in order to hold the semiconductor device. Note (lines 5,6, paragraph 0078, fig. 8) are cited for support inherent position.

With regard to claim 10, Chaiken discloses the diode structure is a detection element in photovoltaic devices. (Note lines 7-14, paragraph 0008, fig. 6 of Chaiken).

With regard to claims 11-17, Chaiken discloses an ultra-high data storage device using phase-change diode memory device comprising a silicon substrate 222, a counter electrode semiconductor 226 made of  $\text{CuInSe}_2$  which serves as first diode layer formed over the silicon substrate 222, a second diode layer 228 of phase change material formed on the counter electrode semiconductor 226 to form a diode junction, phase-change material made of  $\text{CuInSe}_2$  or  $\text{Cu}(\text{In}_{1-x}\text{Ga}_x)\text{Se}_2$ . (Note line 1, paragraph 0064, page 6; line 1, paragraph 0067, page 6; lines 3-12, paragraph 0021, page 3; lines 3-12, paragraph 0074, and lines 7-10, paragraph 0078, page 6, figs. 6,8 of Chaiken).

With regard to claim 18, Chaiken discloses the buffer layer 224 serves as field layer formed over the substrate 222. (Note fig. 6 of Chaiken).

**Allowable Subject Matter**

4. Claim 19 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 19 is allowable over the prior art of record, because none of these references disclose or can be combined to yield the claimed invention such as the field layer is composed of molybdenum.

**Conclusion**

5. Any inquiry concerning this communication or earlier communication from the examiner should be directed to Tan Tran whose telephone number is (571) 272-1923. The examiner can normally be reached on M-F 8:30AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn can be reached on (571) 272-1915. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 872-9306 for after final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

TT

May 2005